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This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

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Additional inventors are being named on the XXXXXXXXXXXXXXXXXXXX separately numbered sheets attached hereto

TITLE OF THE INVENTION (500 characters max)

BREATHABLE ELASTIC LAMINATE AND METHODS OF MANUFACTURING SAME

Direct all correspondence to: **CORRESPONDENCE ADDRESS**

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ENCLOSED APPLICATION PARTS *(check all that apply)*

XX Specification *Number of Pages* *11*

XX Drawing(s) *Number of Sheets* *3*

☐ Application Data Sheet. See 37 CFR 1.76

☐ CD(s), Number _____

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Respectfully submitted,

SIGNATURE _____

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Date *July 2, 2004*

REGISTRATION NO. *33,481*
(if appropriate)
Docket Number: *68-04*

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BREATHABLE ELASTIC LAMINATE AND METHODS OF MANUFACTURING SAME

FIELD OF THE INVENTION

The present invention is related to breathable elastic laminates and their methods of manufacture. More particularly, the present invention is related to breathable elastic laminates comprised of nonwoven web materials and elastomeric members.

BACKGROUND OF THE INVENTION

Breathable elastic laminates are used in the manufacture of many goods. Providing a laminate that is both breathable and elastic may be difficult however. Moreover, some degree of liquid impermeability is often desired, which may add to the difficulty in manufacturing a desirable laminate. Other characteristics too may be desired, such as softness, drapeability, limited stretch, etc. Yet developing a laminate with all these characteristics is difficult.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 shows a partial view of a preferred embodiment.

Figure 2 shows a partial view of a preferred embodiment.

Figure 3 shows a partial view of a preferred embodiment.

Figure 4 shows a partial view of a preferred embodiment.

Figure 5 shows a partial view of a process of a preferred embodiment.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention provides improved breathable elastic laminates and methods of making same. Articles of manufacture and uses are also taught herein.

Preferred embodiments comprise a nonwoven material such as is known in the art, incised with a plurality of incisions. This nonwoven material is then laminated to a elastomeric member. The lamination may occur through any process known in the art, such as vacuum lamination, adhesion (directly with the elastomeric member and/or with adhesive as is known,) etc.

By providing incisions to the nonwoven material, the mechanical characteristics of stretch and recovery are imparted to the material.

Preferred embodiments provide moderate to high elastic stretch and recovery. Of course, the stretch may be moderated as desired. In various preferred embodiments, the incisions are slits, and a nonwoven material with slits used in an especially preferred embodiment is produced by Lark Industries of South Korea, which has low pilling and fuzz properties. The nonwoven material with slits (hereinafter "preslit nonwoven material") is then laminated to an elastomeric member, which may be elastic strands, elastic nonwoven, elastic film, elastic adhesive, or elastic tacky polymeric web. In latter especially preferred embodiments, elastic tacky polymeric web is co-extruded directly onto the preslit nonwoven material, while little or no tensioning force is present on the preslit nonwoven material.

This coextrusion occurs from a film die into a bonding stage. The bonding stage may be a vacuum lamination process, such as the vacuum lamination process described in U.S. Pat. No. 5,733,628 to James Pelkie, and can be used to produce a three-dimensional, apertured elastic layer. Thus, holes will be created in the elastic tacky polymeric web. In other embodiments, various lamination methods as known in the art may be used, such as

pressure lamination using adhesives, hot pin aperturing, ultrasonic or thermal bonding, etc.

In one embodiment of a laminate having the preslit nonwoven and an apertured film, air channels can be created both above and/or below the plane of the apertured film, providing the capability of tailorable breathability to the laminate.

The mechanical characteristics as imparted through incisions may be varied as desired. So for example, the silts of various preferred embodiments may be incised upon the nonwoven material in various numbers, patterns, locations and/or orientations, in order to provide predetermined characteristics. For example, predetermined stretch characteristics may be provided through particular numbers, patterns, locations and/or orientations of slits and/or other incisions. In other embodiments, the types of incisions themselves may be varied, for example, various shapes may be used as desired, (for example, thin rectangles, S- shaped curves, arcs, V-shapes, etc.) so long as desired predetermined parameters are imparted. Types may be mixed, as well as numbers, patterns, locations and/or orientations. Of course, incised regions may be interposed with nonincised regions as well, so as to provide zones or regions of extensibility to the laminate.

The modification of incisions (whether slits as in especially preferred embodiments or otherwise) and subsequent modification of predetermined parameters such as stretch characteristics, may be within a web intended for manufacturing a good. So for example, regions of varying stretch and/or other characteristics, (e.g. breathability) may be provided within a laminate for diaper product construction. Such a laminate might have zones of greater and lesser stretch, so that a part of the laminate to be used in

constructing a leg surround area would have greater stretch, while another part of the laminate to be used for covering a baby's backside would have lesser stretch. Similarly if the laminate is to be used in the diaper tabs for sealing, greater stretch would be imparted to the laminate, while lesser stretch might be desirable in a laminate used across the crotch span.

The laminates may be any number of layers as desired. So, for example, a two layer embodiment, as is described in various places herein, may be desirable. Figure 1 shows a cross section of a two layer embodiment. Preslit nonwoven material 2 and elastomeric member 4 are laid next to skin 6. Three or more layers may also be desired in various embodiments. Figure 2 shows a cross section of a three layer embodiment, with elastomeric member 8 present between preslit nonwoven 7 and 9. In multilayer (more than two layer embodiments) an elastomeric member may be sandwiched between two or more nonwoven layers, using methods as is known in the art, as, for example, shown in Figure 2. For example, a tacky elastomeric member may be used to adhere to a nonwoven layers on either side of the elastomeric member.

Additionally, laminates of various embodiments may vary in width. So for example, a thinner width across the web may be desirable, a broader width, etc. Also other characteristics, such as thickness of the laminate, basis weight of the layers, etc. may all be modified as desired.

Turning to Figure 3, an especially preferred embodiment is seen. Elastic tacky polymeric web 10 is extruded directly onto the preslit nonwoven material 20. Various slits are shown generally at 25. Machine direction is shown in the direction of arrow a. The laminate, shown generally at 30, may then be used as desired. Various embodiments

may provide extensibility of the laminate in the cross direction, machine directional, angularly with respect to either the machine or cross direction and/or a combination thereof, and thus biaxially extensible embodiments may be provided.

Figure 4 shows another embodiment. Nonwoven web 30 has a plurality of incisions (35, 36, 37 and 38, for example.) An elastomeric member (not shown) may then be laminated to nonwoven web 31. Machine direction is shown in the direction of arrow b.

In Figure 5 there is shown another apparatus generally indicated as 500 for forming nonwoven material into preslit nonwoven material. Apparatus 500 includes a pair of rolls 502, 504. Roll 502 includes a plurality of blade regions 506 that extend substantially parallel to a longitudinal axis running through the center of the cylindrical roll 502. Blade regions 506 include a plurality of blades 507. Roll 504 includes a plurality of blades 510 which mesh with tension regions 507 on roll 502. As a nonwoven material is passed between intermeshing rolls 502 and 504, the blades 507 will incise regions of the nonwoven material while leaving others untouched.

Alternatively, roll 504 may consist of a soft rubber, steel or other material. As the material is passed between bladed roll 502 and roll 504 the material will be incised as desired.

The laminate produced by various embodiments provides a generally cloth like appearance while possessing elasticity and recovery. Breathability is also provided, and embodiments may be sterilizable as well. Thus various uses may be made of these embodiments.

Various embodiments may be used in various types of articles, such as, for example adult, child or infant incontinence products (diapers, briefs, etc.,) female menstrual products (e.g. sanitary napkins, pantiliners, etc.,) wraps, including sterile and nonsterile (e.g. bandages with and without absorbent sections,) as well as other disposable and/or multiple use products (e.g. other absorbent articles proximate to a human or animal body, bed sheets, apparel, including under- and outer-wear, medical drapes, medical gowns, packaging materials, protective covers, household, office, medical or construction materials, wrapping materials, etc.)

* * *

Although the present invention has been described with respect to various specific embodiments, various modifications will be apparent from the present disclosure and are intended to be within the scope of the following claims.

CLAIMS

1. A composite material comprising:

   - a nonwoven web comprising a plurality of incisions; and,

   - an elastomeric member;

   wherein said elastomeric member is laminated to said nonwoven web material.

2. A composite material as in claim 1 wherein said incisions are configured within said nonwoven web according to predetermined parameters.

3. A composite material as in claim 2 wherein said predetermined parameters further comprise predetermined stretch characteristics of said composite material.

4. A composite material as in claim 1 wherein said plurality of incisions comprises a plurality of slits.

5. A composite material as in claim 1 wherein said nonwoven web material further comprises a low fuzz apertured nonwoven material.

6. A laminate comprising:

   - a low fuzz apertured nonwoven material with at least one slit;

   - an elastomeric member;

   wherein said elastomeric member is laminated to said low fuzz apertured nonwoven material.

7. A laminate as in claim 6 comprising a plurality of slits.

8. A laminate as in claim 7 wherein said plurality of slits are present in a predetermined configuration.

9. A laminate as in claim 8 wherein said predetermined configuration further comprises predetermined stretch characteristics.

10. An absorbent article comprising:

- a breathable elastic laminate comprising a low fuzz apertured nonwoven material with at least one slit; and an elastomeric member wherein said elastomeric member is laminated to said low fuzz apertured nonwoven material.

11. An absorbent article as in claim 10 further comprising a female menstrual product.

12. An absorbent article as in claim 11 wherein said female menstrual product is a sanitary napkin.

13. An absorbent article as in claim 10 further comprising an incontinence product.

14. An absorbent article as in claim 10 further comprising an adult incontinence product.

15. An absorbent article as in claim 10 further comprising a child incontinence product.

16. An absorbent article as in claim 10 further comprising an infant incontinence product.

17. An absorbent article as in claim 10 further comprising a bandage.

18. An absorbent article as in claim 10 wherein said elastomeric member is partially laminated to said low fuzz apertured nonwoven material.

19. An absorbent article as in claim 18 wherein said elastomeric member is partially laminated to said low fuzz apertured nonwoven material so that air channels are provided between said elastomeric member and said low fuzz apertured nonwoven material.

20. An absorbent article as in claim 10 wherein said elastomeric member is comprised of styrene copolymer.

21. An absorbent article as in claim 10 wherein said low fuzz apertured nonwoven material is comprised of polyethylene.

22. A method for producing a laminate comprising:

- laminating a low fuzz apertured nonwoven material with a plurality of slits to an elastomeric member.

23. A method as in claim 22 wherein said elastomeric member is selected from the group consisting essentially of: elastic strand; elastic nonwoven; elastic film; elastic adhesive; or elastic tacky polymeric web.

24. A method as in claim 22 wherein said plurality of slits is provided to said low fuzz nonwoven apertured material in a predetermined pattern.

25. A method for providing stretch characteristics to a laminate comprising: providing at least one incision into a nonwoven web, and laminating said nonwoven web to an elastomeric member.

26. A method as in claim 25 further comprising providing a plurality of incisions.

27. A method as in claim 26 wherein said plurality of incisions comprise a plurality of slits.

28. A method as in claim 26 wherein said plurality of incisions are provided according to predetermined parameters.

29. A method as in claim 28 wherein said predetermined parameters are provided according to predetermined stretch characteristics.

30. A method for constructing an absorbent article comprising:

- laminating a low fuzz apertured nonwoven material with a plurality of slits to an elastomeric member.

31. A method as in claim 30 wherein said absorbent article comprises a female menstrual product.

32. A method as in claim 30 wherein said female menstrual product is a sanitary napkin.

33. A method as in claim 30 wherein said absorbent article comprises an incontinence product.

34. A method as in claim 30 wherein said absorbent article comprises an adult incontinence product.

35. A method as in claim 30 wherein said absorbent article comprises a child incontinence product.

36. A method as in claim 30 wherein said absorbent article comprises an infant incontinence product.

37. A method as in claim 30 wherein said absorbent article comprises a bandage.

38. A method as in claim 25 wherein said laminating further comprises coextruding a elastic tacky polymeric web elastomeric member onto said nonwoven material at little or no tension, after said incision has been provided into said nonwoven material.

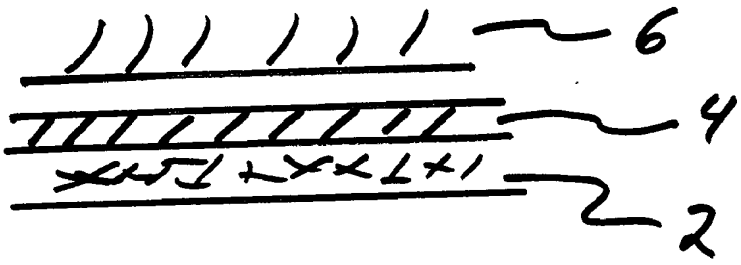

Fig. 1

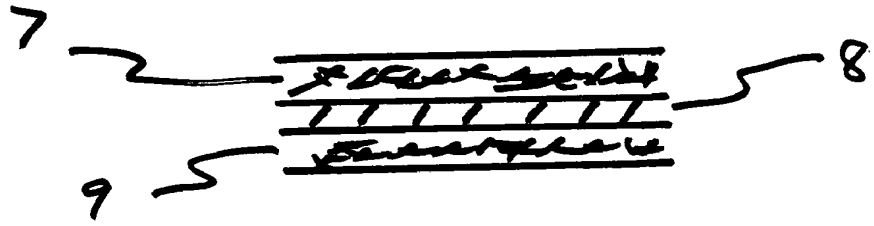

Fig. 2

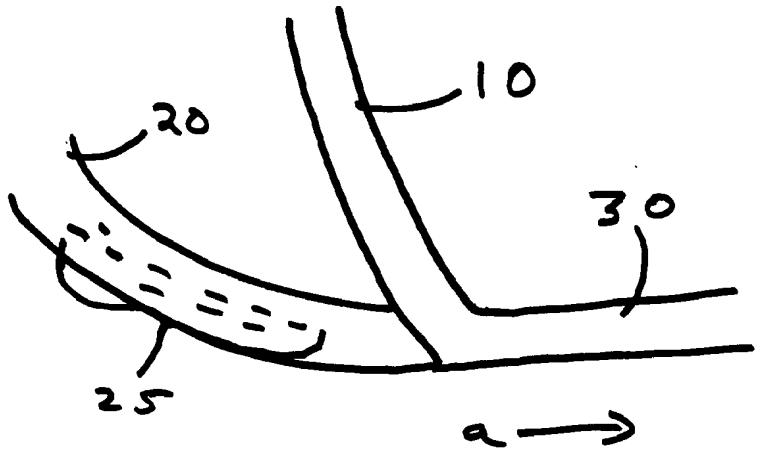

Fig. 3

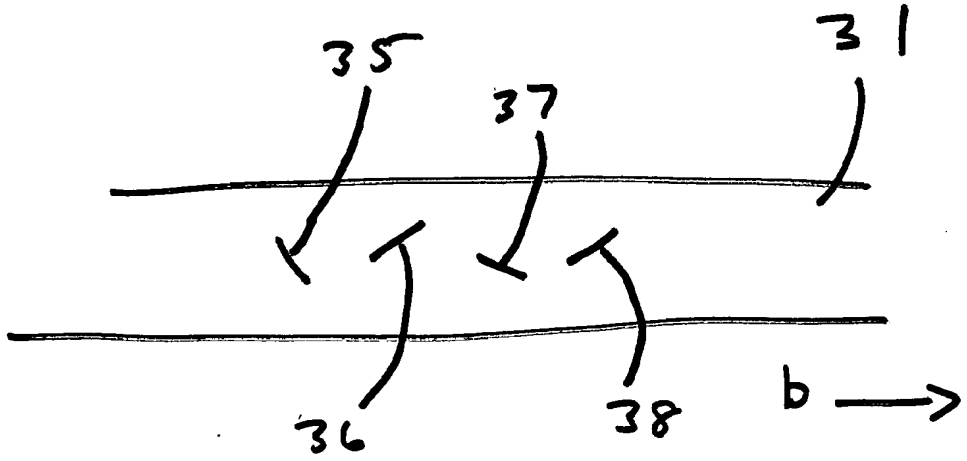

Fig. 4

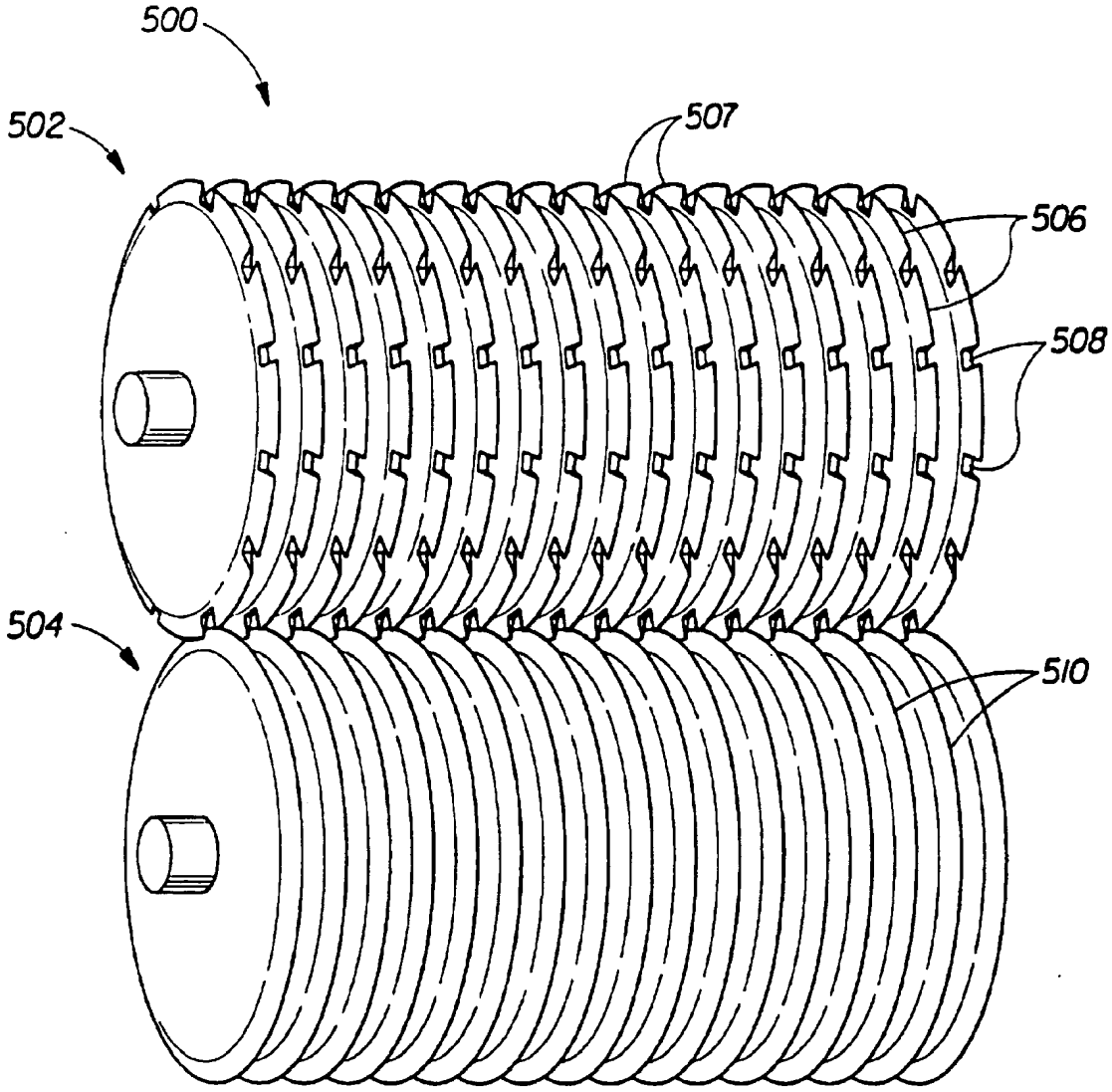

Fig. 5